Korean Soc Sci J (2021) 48:97-117

Determinants of the Internationalization of Born-Digital Firms

Heejung Choi[1] · Eunmi Lee[2] · Young-Ryeol Park[3]

Received: 1 November 2021 / Accepted: 23 November 2021 /
Published online: 1 December 2021

Abstract The primary goal of this research is to identify determinants of the internationalization of born-digital firms. A born-digital firm refers to the firm which relies on the internet for its business management and business process since the birth of the firm. By drawing on the knowledge-based view and resource-based view, this research is expected to expand the realm of the subject matters of international business studies to the extent of born-digital firms. We hypothesized that a born-digital firm's technology type and patent are positively associated with internationalization. We further posited that capital financing as the financial slack moderates the relationships. With the sample of 440 Korean born-digital startups, different variables' effect on the firm's internationalization matter is tested and analyzed. Our results showed that the born-digital firm's patent is positively associated with internationalization whereas technology type is not significant. Yet, capital financing strengthens the relationship between technology type and patent and internationalization. Our results have key theoretical implications that technology capability enables born-digital firms' internalization and capital financing may be a

This work was supported by the 'BK21 FOUR (Fostering Outstanding Universities for Research)' in 2021.

✉ Heejung Choi
(hc1732@nyu.edu)

Eunmi Lee
(tatum@naver.com)

Young-Ryeol Park
(yrpark@yonsei.ac.kr)

[1] Master, School of Business, Yonsei University

[2] Ph.D Candidate, School of Business, Yonsei University

[3] Professor, School of Business, Yonsei University

salient facilitator in driving the internationalization of born-digital firms.

Keywords Born digital · internationalization · knowledge-based theory · technology capability · capital financing

Introduction

Today, the world is experiencing yet another moment of transition of being "digital, connected, and automated (CompTIA, 2019)." Heavily relying on the advanced technology such as artificial intelligence (AI), Internet of Things (IoT), robotics, cloud services, etc., we are going through the '4th Industrial Revolution' (Schwab, 2017). Those high technologies, closely associated with countless-amount of data, introduce the world to a 'digital economy' which goes beyond a simple computation and automation. Since its first appearance in the mid-1990s, the idea and definition of digital economy has evolved with the development and expansion of the internet usage by corporates and consumers (UNCTAD, 2019).

Digital economy is enlarging its size each year that it is estimated to reach about total of $5.0 trillion by the end of 2021 (CompTIA, 2019). Out of top 10 global companies by market capitalization, seven firms offer digital services—that includes Amazon, Alphabet, Alibaba, and Facebook (PwC, 2021). It is inevitable for the traditional multinational enterprises (MNEs) to consider digitization within and beyond its original business activities. The traditional corporates are not the exceptions in front of this change that many of them choose to pursue a digital transformation, "an effort to enable existing business models by integrating advanced technologies" (Bughin et al., 2019).

Promptly meeting the needs of the times, there are born-to-be-digital firms. Born digitals are the digital firms which are digital from their nascent stage (Monaghan et al., 2020), of whose business operations and their capabilities are chiefly based on exploiting internet, information, and digital technologies (Panetta, 2016). While a digital firm itself already has its own uniqueness compared to traditional bricks-and-mortar firms, born digital firms are even more particular in which they need to be differentiated from the 'bricks-and-mortars' who are 'going digital' or who have 'gone digital' (Monaghan et al., 2020). Unlike born digital firms whose digital competencies are inherent, going digitals or gone digitals must put intentional efforts to achieve digital transformation, by internalizing newly invested digital capabilities into their existing organization.

There rarely exit studies that explore born-digital in international business (IB) context. Research on digital economy tends to be considered exclusive to management information system (MIS) literatures. MIS research remains focused on operational strategy of information technology (Bharadwaj et al., 2013), and on digital transformation strategy recently (Vial, 2019). Meanwhile, IB literatures which have taken account of information technology into their research make a note that there are many gaps and spaces for advancements to be made in this research area (Zhao & Priporas, 2017).

Digital economy is opening the new era of globalization which is not yet fully understood theoretically. For instance, while the Uppsala Model (Johanson & Vahlne, 1977; 2009) is

renowned as one of the most cited research models in the school of international business explaining through which process a firm expands to the global market, the model also received a criticism that it has failed to fully adopt the modern digital context of technological intensity into the internationalization process even in their latest update (Coviello et al., 2017). In other words, the existing IB theories are still requiring more progress to better capture the unique characteristics of digital firms such as born-digitals. Although such born-digitals neither internationalize sequentially nor are born global, which are firms that are reliant on the internet since the birth of the firm, there exist scarce studies that suggest what determinants enable born digitals to successfully internationalize (Hennart, 2019).

Based on primary objective of this research is to conduct an empirical research on through which factors born-digital firms' internationalizations are determined based on quantitative analysis. This research is motivated by the previous literatures which have continuously risen an alert to fill the research gap on digital firm's internationalization—especially that of born-digitals. This particular subject of study is at its early stage that previous literatures such as Monaghan et al. (2020) and Hennart (2019) rely mostly on conceptual research or on case-based study. However, as already mentioned, the global economy is undergoing a significant transition with the advancement of digital technology that this research cannot be any more appropriate and timelier. Occurrence of born-digital firms have brought back the international business studies to the very foundation. Increasing born digital firms and their unparalleled dynamics have brought up demands for the considerable expansion of traditional IB theories. This research is therefore conducted in a way to answer the questions on a) how born digital firms internationalize; b) how the traditional international business theories could be extended toward and applied to the domain of born digital firms.

The contribution of our study is as follows. Our findings fill the gap on born-digital firms' internationalization, and this contribution provides theoretical foundations and understanding of born-digital firms. In particular, our study offers the empirical results on what determinants influence the born-digital firm's internationalization by drawing on traditional IB theories. In support of knowledge-based theory and resource-based theory, our results suggest the linkage between IB variables and the digital firm's internationalization expansion. Further, by testing the moderating effect of financial resource, we further contribute to enrich the theoretical underpinnings of born-digital firms by identifying the mechanism in further detail. Taken together, by defining and testing on born-digital firms from the IB context, our study identifies which determinants enable born-digital firm's international expansion and which moderators affect the relationship.

This research is consisted of six sections in total. In the first part, research motivation and background are introduced. In the second part, based on the research questions, in-depth literature review is done to shape the boundaries of born digital firm and to build a theoretical background of the research model, which follows in the third part along with the suggestion of the hypotheses. The fourth chapter includes methodology from data collection, variable selection, descriptive analysis, and to predictive model analysis, which adopts binomial logistic regression. Then the writing will be followed by discussion of which contains findings from the statistical analysis and their meanings. Lastly, based on the overall research process and results, implications and limitations will be discussed in the sixth part.

Theoretical Background

Born-Digital Firm

Prior to the quantitative analysis, it is necessary to adequately determine the boundary of born digital firm. Since the term 'born-digital' possesses a narrower meaning beneath 'digital' firm, it seems logical to define digital firm first then born-digital later. Key factor of digital firm is the internet. Digital firm utilizes the internet over the course of their management and business process as their key resource when producing, operating, and delivering their products or services (Monaghan et al., 2020). Products or services of a digital firm are available in a digital format, marketed and sold through digital infrastructures, and delivered by relying on digital infrastructure (Gabrielsson et al, 2021).

Each and every part of digital firm's business process has to be involved with digital infrastructure. Digital firms acquire the firm to satisfy two conditions that, first, digital firms build and leverage digital infrastructure, and second, digital firms rely on digital infrastructure to accrue communication, collaboration and/or computing capabilities, which allow the firm to both create and sell its offering online through a digital business model (Gabrielsson et al., 2021). Traditional technology hardware firms (e.g., Samsung), non-internet-based software firms (e.g., Adobe), and telecom (e.g., Vodafone) firms are, therefore, are not digital firms, unless they are going-digital (Monaghan et al., 2020).

Within the realm of digital firm, born-digital firm requires another fulfillment: the firm needs to be internet-based (digital) from the inception (Luo et al., 2005). This additional condition makes born-digitals fundamentally different from gone-digitals or going-digitals (Monaghan et al., 2020; Eden, 2018). Digital firm should not be confounded with any kind of industrial categorization. Any kind of established industry and its services could be offered in a digitalized way. Widening the reach of the current era of the digital world, digital technologies are applicable to any sector that it is causing a digital "disruption" (Autio, 2017).

Under the digital innovation, digital firms are now able to be captured in most industries across the world of the internet (Zeng et al., 2019; Haigu & Wright, 2015). It could be transportation, communication, housing, retail, or anything. Spectrum of born-digital firm is substantially wide under the given definition of the term (Shaheer, 2020). For one instance, O2O e-commerce firms such as eBay and Amazon and mobility firm Uber deliver final offline products and services through their digital business platforms. On the other hand, social media such as Facebook and Instagram and media platform such as YouTube and Netflix fully operate through digital value chains only.

The idea of born global firm tending to aim at global expansion from their early stages—unlike bigger and established companies going through a sequential and rather gradual process—has been developed a theory of different ways to perceive international business especially of small and medium sized firms (Rennie, 1993; Knight & Cavusgil, 1996; 2004; Sharma & Blomstermo, 2003). While there is a report that 80% of tech start-ups are born global (Shaheer, 2019; Manyika et al., 2016), born-digital is not always necessarily a born global (Vadana et al., 2019). Born-digital and born global must be clearly discriminated, for each term embodies a different subject matter. Even though this research is concerned about how digitalization has

affected globalization, digitalization and globalization are not interchangeable.

Internationalization of Born-Digital Firms

During the early years of international business, conventional IB theories on internationalization mode and motives stress internalization (Buckely & Casson, 1976) and transaction cost economy (Williamson, 1971; Hennart, 1982). In response to such phenomenon, latecomer theorists in IB have made efforts to complement what the established theories fail to embrace by comprehensively explaining how and why the firm expand beyond their native boundaries. In the meantime, it is argued that the internationalization of born-digital firms must be discerned from traditional MNEs (Brouthers et al., 2016; Shaheer, 2020). One of the biggest reasons for requiring an examination on the internationalization of digital firms is that digital firms are less affected by physical space and place, having a higher internet intensity to foreign assets (Monaghan et al., 2021; Nambisan et al., 2018; Van Alstyne et al., 2016).

According to the basic logic of the traditional IB theories, MNEs cannot avoid encountering disadvantages as foreign players in the global market other than their home country (Hymer, 1976; Zaheer, 1995); the disadvantage is referred as liability of foreignness (LoF) (Johanson & Vahlne, 1997) and then developed to liability of outsidership (LoO) (Johanson & Vahlne, 2009). Brass, Galaskiewicz, Greve, and Tsai (2004) develop social network theory; Rogers (2003) develops diffusion of innovation theory; Brouthers et al. (2016) expands the Uppsala model (Johanson & Vahlne, 2009) to "network-based internationalization process theory", suggesting how digital platform MNEs could make potential users migrate from existing platforms to the new platform, overcoming the liability of 'user-network' outsidership over the course of internationalization. Chen, Shaheer, Yi, & Li (2018) endorse Brouthers et al. (2016)'s research as a "notable" one studying internationalization of new forms—of digital economy—based off traditional international business theories. The point is made that unlike the logic of the conventional IB theories which emphasize internalization and transactions happening within the firm, digital context and user-participating specificity of the platform businesses transform the basic logic of IB from internationalization to externalization (Chen et al., 2019; Chandra & Coviello, 2010; Coviello et al., 2017).

From the traditional IB point of view, to overcome such liabilities, the firms are ought to develop a firm-specific advantage (FSA) (Barney, 1991). Being relatively free from the space-place limitations, digital firms are given the opportunities to develop their FSAs chiefly geared toward their digital technological competitiveness. Many researchers are highly interested in whether digital firms, born-digitals to be specific, are take usual process of internationalization. Since previous literatures on born global firms highlight the role of technological competences of the firm (Cavusgil & Knight, 2009), which tend to overlap with the FSA of born-digital, many are confused with how born-digital resembles born global (Vadana et al., 2019). However, there is a clear distinction between born-digital firm and born global firm in a way that born-digital shows different patterns of internationalization in terms of speed: some chooses to internationalize early and rapidly while others do not but internationalize unintentionally or accidentally (Monaghan et al., 2020; Hennart, 2014).

Hypotheses Development

Technological Type, Patents, and Born-Digital Firms

The knowledge-based view (KBV) perceives knowledge as the most significant resources which could make the firm develop its sustainable competitive advantage. Strategic management literatures have evolved into the KBV from the resource-based view (RBV) (Barney, 1991) that knowledge functions as a tool for value creation and production of goods and services within the organization. Fundamental rationale behind the knowledge-based view, therefore, is that knowledge is essential for overall business activities and especially for opportunity-seeking process for value creation. Knowledge in the relation to firm has been investigated by many researchers with its different aspects by Nelson and Winter (1982), Tsoukas (1996), Kogut and Zander (1993), Spender (1996), Rhee & Kim (2016), etc.

Rugman & Verbeke (2004) specifies different types of knowledge in their research that the firm's knowledge could be primarily divided into 1) technological knowledge, which could be developed through research and development (R&D) activity, and 2) experiential knowledge, which includes both general knowledge and regional knowledge developed through distinctive international experience of the firm. How technological knowledge of the firm as a resource for firm-specific advantage affects management and operations has been studied extensively across strategic management and international business literatures. Technological knowledge especially accumulated through the firm's own internal R&D investment bring about competitive advantage of the firm (Hymer, 1976); this logic is applied to the research on international new ventures (INV) which tend to be knowledge-intense organizations (McGrath et al., 1994; Oviatt & McDougall, 1997; Cho et al., 2007).

KBV theory of the firm perceives possession of knowledge as the most significant resources of the firm in connection to strategic management and internationalization. The knowledge, moreover, obtains more significance when it cannot be easily communicated or be codified, when it is tacit and implicit (Grant, 1996; Nelson& Winter, 1982). Relationship among knowledge, technology, and internationalization are particularly highlighted by research on technology-based small and medium sized enterprises (SMEs) (Lee et al., 2012; Karagozoglu & Lindell, 1998; Kim, 2016). To these SMEs with less experience and shorter lifetime, technological resource is used to overcome disadvantages arouse from liability of foreignness and to develop sustained competitiveness (Lee et al., 2012; Evangelista, 2005). From this theoretical background, it could be suggested that technological capability, or technological knowledge, of a firm has a positive impact on the internationalization of the firm, of the born-digital firm, which is highly dependent upon advanced technology. Of course, there is a suggestion that digital firms are often focused more on its own services or business models than on technology (Giones & Brem, 2017). However, the essence is that technology still functions as an input factor of the firm's production of a service.

Contemporary born-digital firm adopts the 4th industrial revolution-related technologies such as artificial intelligence (AI), cloud computing, etc. According to the previous literatures (Mandel, 2003; Turley & Le Blanc, 1993), the type of technology affects people's decision on whether to use the technology (Im et al., 2008). Technology type has been largely investigated

from the perspectives of marketing or of information system theories that it has a substantial impact on consumer's decision-making process according to their experience.

However, there are not much empirical studies on technology type applied in terms of strategic management or international business (Tumbas et al., 2017; Vadana et al., 2019). In IB literatures, the degree of internationalization is explained as follow. The traditional Uppsala model perceives the internationalization process of firm as a sequential phenomenon that slowly occurs among those who already have an international experience, in the countries who possess a closer psychic distance (Johanson & Vahlne, 1977). On the other hand, born-global firms signify those who seek internationalization since the early years, which are not incorporated the Uppsala model (Rennie, 1993).

Born-digitals neither internationalize sequentially nor are born global. Born-digital firms are not about what previous IB literatures have investigated into. As already noted, born-digital are reliant on the internet since the birth of the firm. Some may insist that born-digitals tend to internationalize in a fast phase with their internet infrastructure which makes them easier to cross borders (De Oliveira Brasil et al., 2013).

In this area, studies tend to be focused on how to manage technology into the production and innovate their business model to enhance productivity (Cooper & Edgett, 2010; Firar & Horwitch, 1985). Technology management research could be further extended by measuring the born-digital firm's key technology type adopted as a technological capability of the firm, which may have a positive impact on the firm's matter of internationalization, based on the KBV point of view.

High-tech ventures' resources determine the firm's internationalization, and it is even more highlighted in the case of born-digital (Chung & Yoon, 2020). There are only a few literatures on born-digital, many of which highlights of what type or form of the internet-based technology a firm develops around is the matter of the firm's internationalization. Born-digital firm's technologies such as cloud computing, AI, platform, big data analysis, etc. are standardized throughout the globe, and such feature makes the firm internationalize more easily and effectively by attaining competitive advantage even in the foreign markets (Dutot et al., 2014; Ahokangas et al., 2014). Therefore, we insist that technology type of born-digital positively affects the firm's internationalization, based on the previous research.

Meanwhile, patent, often a result of R&D expenditures, is revealed to hold a significant impact on the technology-based firm's internationalization (Nam & An, 2017). In relevant studies, patent is often deemed to the technology capability of firms. According to the previous literatures, the number of patents owned by a firm signifies the success of R&D expenditure (Wang et al., 2008; Griliches, 1990). R&D activities are executed for the purpose of developing competitive advantage of the firm, ownership-specific advantage in particular (Dunning, 1980), which is required for effective and profitable internationalization. The patent counts, the result of R&D activity on the one hand could be considered as a one of the most important knowledge resources, developed to be the firm's competitive advantage, especially to the born-digital firms which are associated with high technology. In this research, it is proposed that the born-digital firm's technological knowledge, represented by key digital technology type and by number of patents the firm possesses, affects the firm's internationalization. Therefore, we hypothesized as:

H1a. The digital technology type of a born-digital firm is positively associated a firm's internationalization.

H1b. The number of patents of a born-digital firm is positively associated with a firm's internationalization.

The Moderating Effect of Capital Financing

According to the resource-based view, a firm should develop and retain resources including physical capital, human capital, and organizational capital so that the firm could obtain sustainable competitive advantage over its competitors in global market (Barney, 1991; Wernerfelt, 1984). Among those resources, physical capital could be exemplified by financial standing of the firm that many international business studies rely on how financial capability affects the matter of the firm's internationalization (Zou et al., 2010; Westhead et al., 2001; Ok & Back, 2015; Lee & Park, 2018). Financial capability of the firm is especially significant in the case of new ventures and start-ups according to the past literatures. Financial resources are considered as an important element for start-ups to succeed, along with other factors such as entrepreneurship, innovation, and technology (Yin et al., 2019; Lee, 2017). Life of the digital economy itself is shorter compared to the traditional economies, so the born-digital firms tend to be in its early start-up stages.

Born-digital SMEs and start-ups, which are exposed to higher possibility of financial crunch, rely on capital financing for the purpose of the firms' internationalization (Smolarski and Kut, 2011). There exists a research that while usual SMEs and startups suffer from financial crunch, those with financial slack could accelerate in internationalization of the firm (De Maeseneire and Claeys, 2012). Unlike any other managerial processes, internationalization, signifying abandoning the firm's regular routine and instead expanding to a new area, requires an abundant amount of investment to be executed. Possession of financial slack allows the firm to develop the firm's competitive advantage based on efficient resource supply and investment. Financial slack which is low in resource stickiness and high in liquidity also could be utilized when seeking new markets (Mishina et al., 2004). In case of born-digital firm, their financial slack brought out of capital financing could be used for the firm's R&D, technology development, capacity for innovation, etc. which will eventually lead to the enhancement of the firm's competitive advantage over others.

Therefore, as it is revealed that start-ups and new ventures are highly associated with its financial capability, which is often sourced by capital financing (Yin et al., 2019). A start-up who has drawn more investment are in abundance of financial resource and holds better financial capability, which functions as competitive advantage when seeking global expansion (Lee et al., 2019). Therefore, in this research, it is proposed that total invested amount that a born-digital firm has received and the funding level in which the firm is positioned have a positive impact on the firm's internationalization. Thus, we postulated as follows, and <Figure 1> shows the research model of this study.

H2a. Capital financing of a born-digital firm positively moderates the relationship between a firm's digital technology type and the firm's internationalization.

H2b. Capital financing of a born-digital firm positively moderates the relationship between a firm's number of patents and the firm's internationalization.

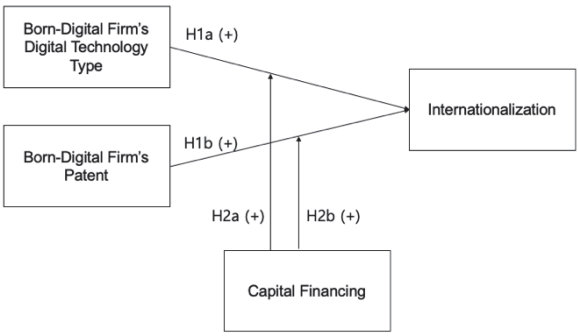

Fig. 1 Research Model

Methodology

Sample Collection

We collected data from the Korean startup database, 'The VC' (www.thevc.kr). Knowing the fact that the born-digital firms are relatively founded within a few recent years, data samples for Korean born-digital firms are collected through the startup database which offers information about Korean startups and SMEs. Through its search engine, overall information about the firm —digital service offered, the age of the firm, number of employees, industry type, key digital technology types, number of patents, which digital platform the firm uses, total invested amount, largest invested amount, funding level, primary investors, comparable firms, etc.—could be collected. Data on the sample firm's internationalization is manually collected whereafter based on its Korean startup database, business report, and press release. Data spans five years from June 2017 to June 2021. In total, our final sample consists of 440 observations of 176 Korean born-digital firms.

Variable and Measurement

Dependent Variable

Internationalization Dependent variable of this research is whether the Korean born-digital firm included in the sample set is internationalized or not. According to the previous IB literatures, the degree of internationalization is measured and included in a research as a dummy variable that this research follows such method as well (Sanyal et al., 2020; Wang et al., 2008). Internationalization of the firm is observed when the firm crosses over its home country boundary. If the firm is operating only within its original country, it is not internationalized. born-digital firm could be considered internationalized if its digital service is used outside of its home

country, even if it does not have any foreign subsidiaries. Security of substantial amount of constant foreign users of the website or the application could mean the digital service's internationalization. Foreign direct investment need not be required for the born-digital firm's internationalization. In this research, value of the variable is coded 1 if the born-digital firm is internationalized; it is coded 0 if the firm is not internationalized.

Independent Variable

Technology type Each born-digital firms included in this research are highly associated with computer programming or software developing technology. Along with the acceleration of the 4th industrial revolution, theses born-digital firms are competing with even more advanced technology such as artificial intelligence. In this research, four different technology types are included: (1) cloud computing, (2) big data analysis, (3) artificial intelligence, and (4) search engine. Such categorization is adopted from a previous literature, which captures four different types of digital firm related technology—cloud computing, artificial intelligence, big data, and social media & platform (including search engines) (Vadana et al., 2019). Among 440 born-digital firms, 130 firms rely on cloud computing; 165 firms rely on big data analysis; 122 firms rely on artificial intelligence, and 27 firms rely on search engine technology.

Patent We used the number of patents of each firm as a dependent variable. The database data from The VC database, which displays the number of patents a firm has. The patent counts data is initially collected through the database. Further, the collected patent counts are double-checked through the *Korean Intellectual Property Rights Information Service* (KIPRIS) and the website of each firm. Patents that are rejected or expired are not included. We used the natural log of the number of patents.

Moderating Variable

Capital Financing We collected the amount of each firm's capital financing in the sample period. Born-digital firms who are mostly start-ups and SMEs receive investment from outside investors, which may be larger conglomerates, leading high-tech companies, venture capitalists, investment bankers, or government organizations (Smolarski and Kut, 2011). These invested companies publicly open the investment data, for it is a signal that the firm or the business model has its potential. Thevc.com exhibits the cumulative amount of a certain firm's investment attraction, along with the latest investment date and the largest investment it received, based on the press release. We used the natural log of capital financing amount.

Control Variable

Firm size Larger firm has higher probability to possess abundant resources of any sort (Hennart, 1991). Thus, research has paid attention to the relationship between firm size and performance, or firm size and internationalization. While some measure firm size with sales revenue size (Calof 1993; O'Reilly 1993; Westhead 1995a), others measure firm size with number of employee (Westhead 1995a; Becker-Blease et al., 2010). In this research, firm size

as a control variable is measured through number of employees. The data is collected through thevc.com and SMINFO, the Korean small and medium sized enterprises information system. We used the natural log of firm size.

Firm age Relationship between firm age and internationalization has been revealed through different studies (Ruzzier & Ruzzier, 2015; Brush, 2013; Singla & George, 2013). In this research, firm age is included in the research model as a control variable. Firm age data is collected through thevc.com and SMINFO. We used the natural log of firm age.

Industry type Industry type is often controlled in international business research (Alon & McKee, 1999; Singla et al., 2014; Fernhaber et al., 2007). Industry data is collected through thevc.com and it is categorized with high preciseness to have total of 12 types, We introduced dummy variable to control industry types: game (1), advertisement and marketing (2), education (3), finance (4), logistics (5), commerce (6), sports (7), travel and food (8), tech (9), environment and energy (10), and etc (11).

Region We also controlled the regions firms located. The disparity of regional development may influence the extent of industrial development (Tödtling & Kaufmann, 2001). In particular, extant studies have stressed that spatial and geographical differences are impactful in driving technological development and innovation since innovative regions such as clusters would reap benefits in accumulating and sharing of knowledge in technology development (Zhou and Xin, 2003). We introduced dummy variable of six regions including domestic and international cities; Seoul (1), Gyeonggi-do (2), Busan (3), Daejeon (4), Gwangju (5), interanational cities (6).

Table 1 Variables and Measurement

Type	Name	Measurement	Data Period	Data Source
Dependent Variable	Internationalization	Internationalized: 1 Not internationalized: 0	2017-2021	The VC
Independent Variable	Technology type	Cloud computing: 1 Big Data Analysis: 2 Artificial Intelligence: 3 Search Engine: 4	2017-2021	The VC
	Patent	Number of patents	2017-2021	Korean Intellectual Property Rights Information Service
Moderating Variable	Capital Financing	The amount of each firm's capital financing received	2017-2021	The VC
Control Variable	Age	Firm Age	2017-2021	The VC; SMINFO
	Size	Number of employees	2017-2021	The VC; SMINFO
	Industry type	Industry categorization	2017-2021	The VC; SMINFO
	Region	Seoul: 1 Gyeonggi-do: 2 Busan: 3 Daejeon: 4 Gwanju: 5 International Cities: 6	2017-2021	The VC; SMINFO

Methodology

Research model and hypotheses are empirically tested through the binomial logistic regression model, for the dependent variable of this research is binary variable of 1 (internationalized) and 0 (not internationalized) (Cox, 1958). Binomial logistic regression model produces a probability of the event to occur in given situation. In this research case, the model will suggest a probability of a born-digital firm to internationalize with the suggested independent and moderating variables—technological resource, financial resource, and digital delivery method. Regression equation of the model is as follow:

$$\log\left(\frac{\widehat{internationalization}}{1-internationalization}\right) = \alpha + \beta_1(\log(TECHtype)) + \beta_2(\log(PATENT)) + \beta_3(\log(Financial\ Resource)) + \beta_4(\log(TECHtype) * \log(Financial\ Resource)) + \beta_5(\log(PATENT) * \log(Financial\ Resource))$$

Goodness of fit of the research model is estimated through the Hosmer-Lemenshow test. Logistic regression analysis result will produce regression coefficients for each variable, which signifies higher probability of internationalization when positive (+) and lower probability when negative (-).

Result

Descriptive Statistics

In this section, frequency analysis is done for each categorical variable included in this research —key digital technology type, investment level, digital delivery method, and industry. Among 440 sample Korean born-digital firms, 264 firms are not internationalized, and 176 firms (40% of the entire sample) are internationalized. Industry distribution of the internationalized (1) and not internationalized (0) firms are shown in the table below. Out of 440 sample firms, 95 firms are part of the management support industry, which takes the largest portion out of 33 different industry categories. Among the industrial categories included in the sample, none of the construction, pet service, kids, and blockchain firms are internationalized.

Table 2 Internationalization Frequency Table by Key Technology Type

Code	Key Digital Technology Type	Internationalized (1)	Not Internationalized (0)	% of 1
1	Cloud Computing	61	69	47
2	Big Data Analysis	57	112	34
3	Artificial Intelligence	54	68	44
4	Search Engine	6	21	22

On the other hand, social/volunteer, ship, chemical, VR/AR, meeting/event, livestock industries mark 100% rate of internationalization, yet each of their sample size is 1, which is notably small compared to other industries. Game, finance, agriculture bio, security, beauty, environment/energy, and broadcast/communication industries also mark more than 50% of industrialization.

Four different key digital technology types are coded into the dataset—cloud computing; big data analysis; artificial intelligence; search engine. The frequency table below displays the number of born-digital firms internationalized or not internationalized by upon which key digital technology the firm is relied (see Table 2). Among four different technology types, cloud computing has the highest number and rate of internationalization.

Correlation Analysis

<Table 3> shows correlations between variables. Whereas Pearson coefficient is the most commonly used correlation coefficient, Cramer's V coefficient is selected to conduct a correlation analysis in this research. Cramer's V coefficient is appropriate for categorical variables when at least one of the tested variables is not binary and consisted of more than two categories. Pearson correlation coefficient is calculated in case of two numerical variables. According to <Table 3>, correlation coefficients are mostly moderate or weak.

Generally, a correlation coefficient higher than 0.7 is assumed to possess multicollinearity. Even though there is no variable with more than 0.7 correlation coefficient, the multicollinearity assumption needs to be cleared out. Multicollinearity is usually determined by the Variance Inflation Factor (VIF) in a regression model. The highest value of VIF was 1.573357, which is significantly lower than the acceptable threshold of 10 (Hair et al., 1988). Therefore, multicollinearity is not a serious concern for our study.

Table 3 Correlation

	Mean	S.D.	1	2	3	4	5	6	7	8
1. Firm size^{L}	2.697	1.045	1.000							
2. Firm age^{L}	1.401	0.736	0.439**	1.000						
3. Industry type	10.750	4.226	0.007	-0.063	1.000					
4. Regions	1.830	1.902	-0.052	-0.088	0.092	1.000				
5. Capital Financing^{L}	21.036	1.989	0.649**	0.412**	-0.043	0.002	1.000			
6. Technology type	0.645	0.461	-0.008	-0.206**	0.012	-0.006	-0.017	1.000		
7. Patents^{L}	0.901	0.898	0.503**	0.383**	-0.011	-0.118	0.380**	-0.031	1.000	
8.Internationalization	0.40	0.490	0.276**	0.312**	-0.109*	-0.010	0.314**	-0.071	0.309**	1.000

$^{*}p<0.05$, $^{**}p<0.01$

Results

<Table 4> shows hypotheses testing results. Model 1 included control variables. Model 2 included an independent variable of a firm's digital technology type to test H1a. Model 3 included the

independent variable of a firm's patent to test H1b. Model 4 examined whether capital financing moderates the relationship between a firm's digital technology and internationalization to test H2a. Finally, Model 5 examined whether capital financing moderates the relationship between a firm's patent and internationalization to test H2b.

Hypothesis 1a states that the digital technology type of a born-digital firm is positively associated with the firm's internationalization. The results from Model 2 in <Table 4> show the results are statistically insignificant (coeff = -0.272, p>0,05), therefore, Hypothesis 1a is not supported.

Hypothesis 1b states that the number of patents a born-digital firm is positively associated with the firm's internationalization. As shown in Model 3 in <Table 4>, a firm's patent is positively associated with internationalization (coeff = 0.523, p<0,05), thus, Hypothesis 1b is supported.

Hypothesis 2a states that capital financing of a born-digital firm positively moderates the relationship between the firm's digital technology type and the firm's internationalization. The results from Model 4 illustrate that capital financing positively moderates the relationship between a firm's technology type and internationalization (coeff = 0.397, p<0,05). Hence, Hypothesis 2a is supported.

Hypothesis 2b states that capital financing of a born-digital firm positively moderates the relationship between the firm's number of patents and the firm's internationalization. The results from Model 5 illustrates that capital financing positively moderates the relationship between a firm's technology type and internationalization (coeff = 0.079, p<0,05). Therefore, Hypothesis 2a is supported.

Table 4 Hypotheses Testing Results

Dependent variable	Internationalization									
	Model 1		Model 2		Model 3		Model 4		Model 5	
	Beta	S.E.	B	S.E.	B	S.E.	B	S.E.	B	S.E.
Control variables										
Firm size^{L}	0.384**	0.119	0.402**	0.120	0.234	0.212	0.176	0.175	-0.014	0.276
Firm age^{L}	0.975**	0.198	0.925**	0.202	1.080**	0.416	0.967**	0.246	1.051	0.476
Industry type	-0.044	0.027	-0.044	0.027	-0.110*	0.047	-0.007	0.033	-0.105	0.058
Regions	0.068	0.063	0.069	0.063	0.153*	0.242	0.065	0.084	0.238	0.154
Capital Financing^{L}							-8.748*	3.314	0.336	0.190
Independent variables										
Technology type			-0.272	0.243			-0.038	0.121		
Patent^{L}					0.523*	0.242			2.349	3.330
Moderating variables										
Tech type*CF							0.397*	0.155		
Patent*CF									0.079*	0.151

*p<0.05, **p<0.01.

Conclusion

Discussion

This study was conducted to find determinants affecting born-digital firm's internationalization. We examined 440 Korean born-digital firms. We tested whether the technology type and patents of born-digital firms influence firm's internationalization. Further, we investigated how capital financing may affect the relationship between technology type and paten and internationalization. We found patent of born-digital firms is positively associated with internationalization of born-digital firms. Our study also suggested that capital financing positively moderate both relationship between technology type and patent and internationalization.

Conclusion

Based on findings, we present the following theoretical contributions. First, our study contributes to the IB studies. Built upon the limited extant research, our study extended the theoretical understanding of born-digital firms in the IB context. By drawing on the knowledge-based theory and resource-based theory on internationalization, our study suggested an in-depth understanding of born-digital firms and the attributes of those firms. Existing IB studies have not paid much attention to providing a theoretical foundation on born-digital firms. Born-digital firms' internationalization take different characteristics from that of the traditional enterprises due to the fact that they are the new ventures heavily internet reliant. However, empirical verification on the born-digital firm's internationalization has not been conducted as much. To fill the research gap, we proposed an approach of understanding born-digital films and examining the determinants of internationalization. This research suggests an integration of the IB research with the MIS research, by defining born-digital and discriminating it from other types of firm that may cause confusion, and by conducting empirical analysis on the key technology type and the number of patents a firm possesses. Over the research process, the research model is built upon the knowledge-based view (KBV) and the resource-based view (RBV), which are utilized as an academic lens to understand the determinants of the born-digital firm's internationalization.

Thus, discerning the born-digital firm's features and applying them to the extant IB theories and expanding them, this research brings about some academic significance. Ever since the school of international business (IB) made its appearance to the academic world during the mid and late twentieth century, many IB scholars have put efforts to enhance the understanding of multinational enterprises (MNEs)' business dynamics, on 'how' they achieve global expansion and on 'why they are eager to do so. Such academic curiosity became a motivation to develop different IB theories. This research makes an academic contribution by expanding the realm of the existing international business theories.

In this research, no one specific type of digital business, such as platform business or sharing economy, is pointed out, but the entire born-digital firms are investigated as a single new type of business phenomenon. Born-digital firms as a whole require an extension of IB theories. In that sense, this research holds significance by attempting to theoretically fill the gap in the previous research on born-digital firms, which are concerned with certain types of digital business

and certain forms of internationalization.

Second, this research involves the result of the empirical testing when deriving the conclusion which brings about another academic contribution. While the previous literatures, both IB and MIS, only made some minor attempts to define born-digital or to suggest taxonomy of it, this research conducts empirical analysis to investigate the determinants of the born-digital's internationalization through measuring technology type or the number of patents. Our results showed that born-digital firm's patent is positively associated with internationalization whereas technology type is insignificant. The results imply that the technology capability of born-digital firms is salient to expand internationally. That is, even if a firm is inherently internet-based, or born-digital, inimitable, rare, and valuable intangible resource still pertain persuasive forces when determining the firm's competitiveness (Teece, 2014). The results are consistent with extant studies. It is rather beneficial for a digital firm to possess technological capability when expanding abroad (Nam & An, 2017; Cavusgil & Knight, 2009). Born digital firms, particularly, rely more on technological capability for their survival. Industries surrounded by born-digital firms are especially competitive and face changes so fast worldwide that it is difficult to internationalize if it fails to sustain competitive advantage. This research makes a theoretical contribution in a way in which the findings suggest what are the necessary assets for the born-digital firms to secure in order to successfully internationalize.

Third, we further contribute to enriching the theoretical underpinnings of born-digital firms and internationalization by identifying the moderating effects affecting the relationship between technology type and patent and internationalization. Our results showed that capital financing positively strengthens both relationships between born-digital firms' technology type and patent and internationalization. It is noteworthy that capital financing may facilitate investment to develop and innovate the firm's technology capability, leading to internationalization. Firms may perceive capital financing as a financial slack, and financial slack relieves the cash flow and the pressure on monetary issues. Since financial slack is salient to SMEs and start-ups that tend to struggle with cash flow, the greater financial slack enables firms to invest and develop up-to-date technology (Parida & Örtqvist; 2015). Through the 'self-reinforcing process, the born-digital firm with more financial slack through capital financing could have better global competitiveness. In other words, such FSA facilitates the born-digital firm's internationalization.

The result of this research aligns with the previous literature. According to the precedent studies, the firm's financial resources from capital financing expedite the firm's ultimate innovation as well as the firm's R&D investment (Smolarski & Kut, 2011; De Maeseneire & Claeys, 2012). Therefore, some may perceive that capital financing is inevitable for SMEs and startups which are pursuing innovation and competitive advantage. Although scarce, some also insist that capital financing leads the firms to invest more in intangible resources which are beneficial for possessing FSAs, which eventually benefit internationalization of the born digitals (Yin et al., 2019; Lee et al., 2019). By supporting the arguments of the previous literature, the empirical result of this research offers novel insights and a better understanding of the research on the born-digitals firm's internationalization.

The result of this research discussed above is valuable. This research not only investigates the determinants of the internationalization of born-digital firms, which are rarely conducted at the moment but also proposes empirical rationales for the occasions facilitating the internationalization. Especially, this research is conducted around the IB context to examine

and analyze the born-digital firm's internationalization. Such research is rather not frequent in IB school that this research makes an academic contribution by expanding the research area of international business theories.

Lastly, this research also holds a practical implication. Since the outbreak of the COVID-19 pandemic, digital transformation has been accelerated and more and more born-digital firms are coming to life. Born-digital firms, compared to the traditional manufacturing or service firms, are rather opportune to cross borders due to their unique characteristic, innately dependent upon a globally standardized infrastructure, the internet. According to the result, it could be implied that the firm's initial technology is less important than developing sustainable competitive advantage during the process of internationalization. Born-digital firm's survival in global market is controlled under the matter of possessing inimitable, rare, and valuable resource. Even if the firm at the beginning gambles on its technology, it should still keep investing into certain competitive advantage in order to successfully internationalize. Displaying which factors are important to accomplish global expansion to many more born-digital firms to come, this research maintains a practical implication.

Limitations and Future Research

This study is not without limitations. meaning. Even if the direct determinants of born-digital firm's internationalization have been identified through this research, it also carries a clear limitation that it fails to conclude an empirical significance of technology type as an independent variable of this research model. Whereas its direct effect of patent is proven, the technology type fails to produce any statistical meaning. There may be several reasons to such result.

In this research, we aim at exploring by which determinants the Korean born-digital firms are affected when internationalizing. Most of the sample firms of the data are unlisted venture corporations, yet we expect that the research could be extended when the listed born-digital firms are included in the future. Moreover, the listed born-digital firms with FDI(foreign direct investment) data would derive research that beyond technological capability, examining many other variables that may affect born-digital firm's internationalization.

Dependent variables included in this research are far from being creative. They are already investigated through many other international business literatures. For the reason of expanding the existing theories, this research adopts previous research with different research subject. The novelty of this research could be embraced if and only if the all independent variables are fully supported.

References

Ahokangas, P., Juntunen, M. and Myllykoski, J. (2014), "Cloud Computing and Transformation of International E-Business Models", *A Focused Issue on Building New Competences in Dynamic Environments* (*Research in Competence-Based Management, Vol. 7*), Emerald Group Publishing Limited, Bingley, pp. 3-28. https://doi.org/10.1108/S1744-211720140000007001

Alon, I., & McKee, D. L. (1999), "The internationalization of professional business service franchises", *Journal of Consumer Marketing*.

Autio, E. (2017), "Digitalisation, ecosystems, entrepreneurship and policy. Perspectives into topical issues is society and ways to support political decision making. government's analysis", *Research and Assessment Activities Policy Brief*, 20.

Barney, J. (1991), "Firm resources and sustained competitive advantage", *Journal of Management*, 17(1), 99-120.

Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. (2013), "Digital business strategy: toward a next generation of insights", *MIS Quarterly*, 471-482.

Brass, D. J., Galaskiewicz, J., Greve, H. R., & Tsai, W. (2004), "Taking stock of networks and organizations: A multi level perspective", *Academy of Management Journal*, 47(6),795-817.

Brouthers, K. D., Geisser, K. D., & Rothlauf, F. (2016), "Explaining the internationalization of ibusiness firms", *Journal of International Business Studies*, 47(5), 513-534.

Brush, C. (2013), "*International entrepreneurship (RLE International Business): the effect of firm age on motives for internationalization*". Routledge.

Bughin, J., Deakin, J., O'Beirne, B. (2019), "Digital transformation: Improving the odds of success", *McKinsey Quarterly*.

Calof, J. L. (1993), "The impact of size on internationalization", *Journal of Small Business Management*, 31(4), 60-69.

Cavusgil, S. T., & Knight, G. (2009), "*Born global firms: A new international enterprise*", Business Expert Press.

Chandra, Y., & Coviello, N. (2010), "Broadening the concept of international entrepreneurship: 'Consumers as international entrepreneurs", *Journal of World Business*, 45(3), 228-236.

Chen, L., Shaheer, N., Yi, J., & Li, S. (2019), "The international penetration of ibusiness firms: Network effects, liabilities of outsidership and country clout", *Journal of International Business Studies*, 50(2), 172-192.

Cho, D.S., Park, J.C., Lee, Y.C. (2007), "The mechanism for global expansion of small firm: The catch up case of Humax in Korea", *International Business Review*, 11(2), 117-144.

Choron, M., Cummings, S., Laroia, A., & Yavar, E. (2020), "COVID-19 IS Accelerating the Rise of the Digital Economy: Digital Transformation in the Pandemic & Post-Pandemic Era", BDO. https://www.bdo.com/getattachment/07e769aa-5755-4151-9b52-4eeccfe61710/attachment.aspx?ADV_DTS_COVID-19-is-Accelerating-the-Rise-of-the-Digital-Economy_Web.pdf (accessed Aug 28, 2021)

Chung, J. Y., & Yoon, W. (2020). Technological capabilities and internationalization of high-tech ventures: The moderating role of strategic orientations. Managerial and Decision Economics, 41(8), 1462-1472.

CompTIA (2019). "IT Industry Outlook 2019. CompTIA. IL, USA", https://comptiacdn.azureedge.net/webcontent/docs/defaultsource/research-reports/comptia-it-industry-outlook-2019_web.pdf?sfvrsn=669cb2d8_2 (accessed Sep 03, 2021)

Cooper, R. G., & Edgett, S. J. (2010), "Developing a product innovation and technology strategy for your business", *Research-Technology Management*, 53(3), 33-40.

Coviello, N., Kano, L., & Liesch, P. W. (2017), "Adapting the Uppsala model to a modern world: Macro-context and microfoundations", *Journal of International Business Studies*, 48(9), 1151-1164.

Cox, D. R. (1958), "The regression analysis of binary sequences". *Journal of the Royal Statistical Society: Series B(Methodological)*, 20(2), 215-232.

De Maeseneire, W., & Claeys, T. (2012), "SMEs, foreign direct investment and financial constraints: The case of Belgium", *International Business Review,* 21(3), 408-424.

De Oliveira Brasil, M. V., Ogasavara, M. H., de Oliveira, F. C., Tassigny, M. M., & Fontenele, R. E. S. (2013). The role of internet in the born global companies. *Revista de Administração da UFSM*, *6*(2), 431-442.

Dunning, J. H. (1980), "Toward an Eclectic Theory of International Production: Some Empirical Tests", *Journal of International Business Studies,* 11, 9-31.

Eden, L. (2018), "*The fourth industrial revolution: Seven lessons from the past", In R. van Tulder, A. Verbeke, & L. Piscitello (Eds), International business in the information and digital age (vol. 13, pp.327-356)"*. London: Emerald.

Evangelista, F. (2005), "Qualitative Insights into the International New Venture Creation Process," *Journal of International Entrepreneurship*, 3, 179-198.

Fernhaber, S. A., McDougall, P. P., & Oviatt, B.M. (2007), "Exploring the role of industry structure in new venture internationalization", *Entrepreneurship Theory and Practice,* 31(4), 517-542.

Friar, J., & Horwitch, M. (1985), "The emergence of technology strategy: A new dimension of strategic management", *Technology in Society,* 7(2-3), 143-178.

Gabrielsson, M., Fraccastoro, S., Ojala, A., &Rollins, M. (2021), "Digital Entrepreneurial Internationalizers: Definitions, Theoretical Implications, and Research Avenues", *In Proceedings of the 54th Hawaii International Conference on System Sciences*, 5069.

Giones, F., & Brem, A. (2017). "Digital technology entrepreneurship: A definition and research agenda". *Technology Innovation Management Review*, *7*(5).

Grant, R. M. (1996), "Toward a knowledge-based theory of the firm", *Strategic Management Journal*, 17 (S2), 109-122.

Griliches, Z. (1990), "Patent statistics as economic indicators: 1990", National Bureau of Economic Research.

Hagiu, A., & Wright, J. (2015), "Multi-sided platforms", *International Journal of Industrial Organization*, 43, 162-174.

Hair, J., Anderson, R., Tatham, R., & Black, W. (1988), "*Multivariate Data Analysis*", Engleweed Cliffs.

Hennart, J. (2019), "Digitalized service multinationals and international business theory", *Journal of International Business Studies,* 50(8), 1388-1400.

Hennart, J. F. (2014), "The accidental internationalists: A theory of born globals", *Entrepreneurship Theory and Practice*, 38(1), 117-135.

Hennart, J. F. (1982), "*A Theory of Multinational Enterprise*", University of Michigan Press, Ann Arbor, MI.

Hymer, S.A. (1960), "The International Operations of National Firms: A Study of Foreign Direct Investment", PhD dissertation, Department of Economics, Massachusetts Institute of Technology, 1960, published in 1976 by MIT Press, Cambridge, MA.

Im, I., Kim, Y., & Han, H. J. (2008), "The effects of perceived risk and technology type on users' acceptance of technologies", *Information & Management,* 45(1), 1-9.

Johanson, J., & Vahlne, J. (2009), "The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership", *Journal of International Business Studies*, 40(9), 1411-1431.

Johanson, J., & Vahlne, J. (1977), "The Internationalization Process of the Firm—A Model of Knowledge Development and Increasing Foreign Market Commitments", *Journal of International Business Studies*, 8(1), 23-32.

Karagozoglu, N., & Lindell, M. (1998), "Internationalization of small and medium-sized technology-based firms: An exploratory study", *Journal of Small Business Management,* 36(1), 44.

Knight, G. A. and Cavusgil, S. T. (1996), "The Born Global Firm: A Challenge to Traditional Internationalization Theory", *Advances in International Marketing*, 8, 11-26.

Kogut, B., & Zander, U. (1993), "Knowledge of the firm and the evolutionary theory of the multinational corporation", *Journal of International Business Studies*, 24(4), 625-645.

Lee, S. (2017), "An analysis on the critical start-up success factors in small-sized venture businesses", *Asia-Pacific Journal of Business Venturing and Entrepreneurship*, 12(3), 53-63. (in Korean).

Lee, H., Kelley, D., Lee, J., & Lee, S. (2012), "SME survival: The impact of internationalization, technology resources, and alliances". *Journal of Small Business Management*, 50(1), 1-19.

Lee, D. H., & Park, J. H. (2018), "Internationalization and performance of Korean companies: Moderating effects of financial slack and industry globalization", *International Business Journal*, 29(4), 51-84. (in Korean).

Lee, J. M., Song, C., Park, K. M., Choi, I., & Kim, Y. (2019), "The effects of direct and indirect government policies on technology entrepreneurship considering national cultural context"*, Innovation Studies*, 14(1), 33-59.

Luo, Y., Zhao, J H., & Du, J. (2005), "The internationalization speed of e-commerce companies: an empirical analysis", *International Marketing Review*, 22(6), 693-709.

Mandel, N. (2003), "Shifting selves and decision making: The effects of self-construal priming on consumer risk-taking", *Journal of Consumer Research,* 30(1), 30-40.

Manyika, J., Lund, S., Bughin, J., Woetzel, J.,Stamenov, K., & Dhingra, D. (2016), "Digital globalization: The new era of global flows", *McKinsey & Company*.

Mcgrath, R. G., Venkataraman, S., & MacMillan, I. C. (1994), "The advantage chain: Antecedents to rents from internal corporate ventures", *Journal of Business Venturing*, 9(5), 351-369.

Mishina, Y., Pollock, T. G., & Porac, J. F. (2004), "Are more resources always better for growth? Resource stickiness in market and product expansion", *Strategic Management Journal,* 25(12), 1179-1197.

Monaghan, S., Tippmann, E., & Coviello, N. (2020), "Born digitals: Thoughts on their internationalization and a research agenda", *Journal of International Business Studies*, 51(1), 11-22.

Nam, H. J., & An, Y. (2017), "Patent, R&D and internationalization for Korean healthcare industry", *Technological Forecasting and Social Change*, 117, 131-137.

Nambisan, S., Siegel, D., & Kenney, M. (2018), "On open innovation, platforms, and entrepreneurship", *Strategic Entrepreneurship Journal*, 12(3), 354-368.

Nelson, R. R., & Winter, S. G. (1982), "The Schumpeterian tradeoff revisited", The *American Economic Review*, 72(1), 114-132.

O'Reilly, M. (1993), "Exporting and the smaller firm-the Northern Ireland experience", In *16th national small firms' policy and research conference 17-19*.

OECD. (2020), "Digital Transformation in the Age of COVID-19: Building Resilience and Bridging Divides, Digital Economy Outlook2020 Supplement", *OECD*, Paris, www.oecd.org/digital/digital-economy-outlook-covid.pdf. (accessed Oct 31, 2021)

Ok, C. H., & Back, Y. J. (2015), "The relationship between slack resources of venture firms and internationalization: Moderating effects of domestic industry characteristics", *International Business Journal*, 26(4), 1-35. (in Korean).

Oviatt, B. M., & McDougall, P. P. (1997), "Challengesfor internationalization process theory: The case of international new ventures", *MIR: Management International Review*, 85-99.

Panetta, K. (2016), "*10 Management Techniques from Born-Digital Companies*", Gartner.

Parida, V., & Örtqvist, D. (2015). "Interactive effects of network capability, ICT capability, and financial slack on technology-based small firm innovation performance". *Journal of Small Business Management*, 53, 278-298.

PwC. (2021), "Global Top 100 companies by market capitalization", *PwC*. https://www.pwc.com/gx/en/audit-services/publications/assets/pwc-global-top-100-companies-2021.pdf (accessed Apr 05, 2021)

Rennie, M. W. (1993). Born global. *The McKinsey Quarterly*, (4), 45-53.

Rhee, J. H., Kim, S. (2016), "An Empirical Test on the Determinants of Korean Firms' Entry into Brazil: Focusing on Three Types of Knowledge related to Globalization", *Korean Academy of International Business Management*, 20(2), 75-99. (in Korean).

Rogers, E. (2003), "Diffusion of Innovations". Fifth edition. Free Press: New York.

Rugman, A. M., & Verbeke, A. (2004), "A perspective on regional and global strategies of multinational enterprises", *Journal of International Business Studies*, 35(1), 3-18.

Ruzzier, M., & Ruzzier, M. K. (2015), "On the relationship between firm size, resources, age at entry and internationalization: the case of Slovenian SMEs", *Journal of Business Economics and Management*, 16(1), 52-73.

Sanyal, S., Hisam, M. W., & Baawain, A. M. S. (2020). "Entrepreneurial orientation, network competence and human capital: The internationalization of SMEs in Oman". *The Journal of Asian Finance, Economics and Business*, *7*(8), 473-483.

Schwab, K. (2017), "*The fourth industrial revolution*". Currency.

Shaheer, N., Li, S., & Priem, R. (2020), "Revisiting location in a digital age: How can lead markets accelerate the internationalization of mobile apps?", *Journal of International Marketing*, 28(4), 21-40.

Shaheer, N. (2019), "Reappraising International Business in a Digital Arena: Barriers, Strategies, and Context for Internationalization of Digital Innovations. (Doctoral dissertation)" Retrieved from https://scholarcommons.sc.edu/etd/5234

Sharma, D. D., & Blomstermo, A. (2003), "The internationalization process of born globals: a network view", *International Business Review*, 12(6), 739-753.

Singla, C., & George, R. (2013), "Internationalization and performance: A contextual analysis of Indian firms", *Journal of Business Research*, 66(12), 2500-2506.

Singla, C., Veliyath, R., & George, R. (2014), "Family firms and internationalization-governance relationships: Evidence of secondary agency issues", *Strategic Management Journal*, 35(4), 606-616.

Smolarski, J., & Kut, C. (2011), "The impact of venture capital financing method on SME performance and internationalization", *International Entrepreneurship and Management Journal*, 7(1), 39-55.

Spender, J. C. (1996), "Making knowledge the basis of a dynamic theory of the firm", *Strategic Management Journal*, 17(S2), 45-62.

Teece, D. J. (2014). "A dynamic capabilities-based entrepreneurial theory of the multinational enterprise". *Journal of International Business Studies*, 45(1), 8-37.

Tsoukas, H. (1996), "The firm as a distributed knowledge system: A constructionist approach", *Strategic Management Journal*, 17(S2), 11-25.

Tödtling, F., & Kaufmann, A. (2001), "The role of the region for innovation activities of SMEs", *European Urban and Regional Studies*, 8(3), 203-215.

Tumbas, S., Berente, N., & vom Brocke, J. (2017, December). "*Born Digital: Growth Trajectories of Entrepreneurial Organizations Spanning Institutional Fields*". In ICIS.

Turley, L. W., & LeBlanc, R. P. (1993), "An exploratory investigation of consumer decision making in the service sector", *Journal of Services Marketing*.

UNCTAD. (2019), "Digital economy report 2019", *United Nations Publication*. https://unctad.org/system/files/official-document/der2019_en.pdf (accessed Sep 12, 2021)

Vadana, I. I., Torkkeli, L., Kuivalainen, O., & Saarenketo, S. (2019), "*The internationalization of born-digital companies", In The Changing Strategies of International Business (pp. 199-220)*. Palgrave Macmillan, Cham.

Van Alstyne, M. W., Parker, G. G., & Choudary, S. P. (2016), "Pipelines, platforms, and the new rules of strategy", *Harvard Business Review*, 94(4), 54-62.

Wang, C. H., Hsu, L. C., & Fang, S. R. (2008), "The determinants of internationalization: Evidence from the Taiwan high technology industry", *Technological Forecasting and Social Change*, 75(9), 1388-1395.

Wernerfelt, B. (1984), "A resource-based view of the firm", *Strategic Management Journal*, 5(2), 171-180.

Westhead, P. (1995), "Exporting and non-exporting small firms in Great Britain: A matched pairs comparison", *International Journal of Entrepreneurial Behavior & Research.*

Williamson, O. (1971), "The vertical integration of production: market failure considerations", *American Economic Review*, 61, May.

Yin, W., Moon, H. C., & Lee, Y. W. (2019), "The success factors of Korean global start-ups in the digital sectors through internationalization", *International Journal of Global Business and Competitiveness*, 14(1), 42-53.

Zaheer, S. (1995), "Overcoming the liability of foreignness", *Academy of Management Journal*, 38(2), 341-363.

Zeng, J., Khan, Z., & De Silva, M. (2019), "The emergence of multi-sided platform MNEs: Internalization theory and networks", *International Business Review*, 28(6), 101598.

Zhao, S., & Priporas, C. (2017), "Information technology and marketing performance within international market-entry alliances", *International Marketing Review*, 34(1), 5-28.

Zhou, Y., & Xin, T. (2003), "An innovative region in China: interaction between multinational corporations and local firms in a high-tech cluster in Beijing", *Economic geography*, 79(2), 129-152.

Zou, H., Liu, X., & Ghauri, P. (2010), "Technology capability and the internationalization strategies of new ventures", *Organizations and Markets in Emerging Economies*, 1(1), 100-119.